

**What is claimed is:**

1. A continuous renal replacement therapy device adapted to be worn on a portion of the body of a patient, comprising:  
  
a plurality of dialyzers that utilize dialysate to remove impurities from the blood of the patient; and  
  
at least one sorbent device for regenerating the dialysate.
2. The continuous renal replacement therapy device of claim 1, wherein the plurality of dialyzers are connected in series.
3. The continuous renal replacement therapy device of claim 1, wherein the dialyzers comprise a plurality of cylindrical hollow fibers, wherein the patient's blood is circulated within the hollow fibers in a first direction and wherein the dialysate is circulated around at least a portion of the exterior walls of the hollow fibers in a second direction.
4. The continuous renal replacement therapy device of claim 3, wherein the exterior walls of the hollow fibers are semiporous so that impurities can be moved from the blood and into the dialysate.
5. The continuous renal replacement therapy device of claim 1, wherein each of the plurality of dialyzers has a flexible casing adapted to conform to the body contour of the patient.

6. The continuous renal replacement therapy device of claim 1, wherein the number of dialyzers in the plurality of dialyzers may be varied to reflect different dialysis prescriptions.
7. The continuous renal replacement therapy device of claim 1, further including a blood inlet tube leading into a first dialyzer of the series of dialyzers and a blood outlet tube leading out of a last dialyzer in the series of dialyzers.
8. The continuous renal replacement therapy device of claim 7, wherein the blood inlet tube includes a side port for the infusion of anticoagulants into the blood.
9. The continuous renal replacement therapy device of claim 8, wherein the anticoagulant is chosen from the group consisting of: heparin, prostacyclin, low molecular weight heparin, hirudin and sodium citrate.
10. The continuous renal replacement therapy device of claim 7, wherein the blood outlet tube includes a side port for the infusion of additives.
11. The continuous renal replacement therapy device of claim 10, wherein the additives are pumped into the blood from a plurality of additive pumps.

12. The continuous renal replacement therapy device of claim 11, wherein the rate of infusion of each additive is controlled electronically.
13. The continuous renal replacement therapy device of claim 10, wherein the additives are chosen from the group consisting of: sodium citrate, calcium, potassium and sodium bicarbonate.
14. The continuous renal replacement therapy device of claim 1, wherein the at least one sorbent device is a plurality of sorbent devices connected in series.
15. The continuous renal replacement therapy device of claim 1, wherein the at least one sorbent device is a plurality of sorbent devices connected in parallel.
16. The continuous renal replacement therapy device of claim 1, wherein the plurality of dialyzers are connected in parallel.
17. The continuous renal replacement therapy device of claim 1, wherein the dialyzers comprise a plurality of parallel sheets of semiporous material, wherein the patient's blood is circulated on one side of the parallel sheets in a first direction and wherein the dialysate is circulated on the other side of the parallel sheets in a second direction.

18. A continuous renal replacement therapy device adapted to be worn on a portion of the body of a patient, comprising:
  - at least one dialyzer that utilizes dialysate to remove impurities from the blood of the patient; and
  - a plurality of sorbent devices for regenerating the dialysate.
19. The continuous renal replacement therapy device of claim 18, wherein the plurality of sorbent devices are connected in series.
20. The continuous renal replacement therapy device of claim 18, wherein each of the sorbent devices has a flexible casing adapted to conform to the body contour of the patient.
21. The continuous renal replacement therapy device of claim 18, wherein the number of sorbent devices may be varied to reflect different dialysis prescriptions.
22. The continuous renal replacement therapy device of claim 18, further including a regenerated dialysate inlet tube leading into the at least one dialyzer and a spent dialysate outlet tube leading out of the at least one dialyzer.
23. The continuous renal replacement therapy device of claim 22, wherein the regenerated dialysate inlet tube includes a side port for the infusion of additives.

24. The continuous renal replacement therapy device of claim 23, wherein the additives are pumped into the dialysate from a plurality of additive reservoirs.
25. The continuous renal replacement therapy device of claim 24, wherein the rate of infusion of each additive is controlled electronically.
26. The continuous renal replacement therapy device of claim 23, wherein the additives are chosen from the group consisting of: sodium citrate, calcium, potassium and sodium bicarbonate.
27. The continuous renal replacement therapy device of claim 22, wherein the spent dialysate tube leads into the plurality of sorbent devices and the regenerated dialysate tube leads out of the plurality of sorbent devices.
28. The continuous renal replacement therapy device of claim 19, wherein the series of sorbent devices is a series of replaceable cartridges.
29. The continuous renal replacement therapy device of claim 28, wherein the replaceable cartridges include: activated charcoal, urease, zirconium phosphate, hydrous zirconium oxide and activated carbon.

30. The continuous renal replacement therapy device of claim 18, wherein the at least one sorbent device is a plurality of sorbent devices connected in parallel.
31. The continuous renal replacement therapy device of claim 18, wherein the at least one dialyzer is a plurality of dialyzers connected in parallel.
32. The continuous renal replacement therapy device of claim 18, wherein the at least one dialyzer is a plurality of dialyzers connected in series.
33. The continuous renal replacement therapy device of claim 32, wherein the dialyzers comprise a plurality of parallel sheets of semiporous material, wherein the patient's blood is circulated on one side of the parallel sheets in a first direction and wherein the dialysate is circulated on the other side of the parallel sheets in a second direction.

End of claims section – space below this line is intentionally blank.